AMENDMENTS TO THE CLAIMS

Kindly amend claims 2, 3, 6, 10, 12, and 17. Please cancel claims 1, 4-5, 7-9, 13-16, and 18-21. Claims pending in the application become:

1. (Canceled):

2. (Currently Amended): ~~The~~ A supersonic aircraft ~~according to Claim 1 wherein~~ comprising:

a fuselage extending forward and aft along a longitudinal axis, the fuselage having a lower surface and an upper surface;

a highly swept low aspect ratio wing coupled to the fuselage, the wing having a forward leading edge and an aft trailing edge;

an effector flap coupled to the wing trailing edge;

a tail empennage coupled to the fuselage aft of the wing on the fuselage upper surface in a position high relative to the wing, the tail empennage forming a channel region subject to complex shock patterns ~~the tail empennage has~~ and having an inverted V-tail geometry coupled to the wing in a braced wing configuration further comprising a vertical stabilizer, lateral inverted stabilizers, and inverted V-tail control surface ruddervators; and

an effector coupled to the tail empennage; and

a controller coupled to the effector flaps and the effectors, the controller further comprising a control process that reduces drag through channel relief by deflecting both the effector flap down and the effector up, and ~~the controller further comprises~~ a control process capable of adjusting the aircraft longitudinal lift distribution for a selected supersonic Mach number to maintain a low sonic-boom, low drag-trim condition.

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3. (Currently Amended): ~~The~~ A supersonic aircraft ~~according to Claim 1 wherein~~ comprising:

a fuselage extending forward and aft along a longitudinal axis, the fuselage having a lower surface and an upper surface;

a highly swept low aspect ratio wing coupled to the fuselage, the wing having a forward leading edge and an aft trailing edge;

an effector flap coupled to the wing trailing edge;

a tail empennage coupled to the fuselage aft of the wing on the fuselage upper surface in a position high relative to the wing, the tail empennage forming a channel region subject to complex shock patterns, and having ~~the tail empennage has~~ a supersonic T-tail geometry further comprising a vertical stabilizer, a lateral horizontal stabilizer, and a control surface elevator; ~~and~~

an effector coupled to the tail empennage; and

a controller coupled to the effector flaps and the effectors, the controller further comprising a control process that reduces drag through channel relief by deflecting both the effector flap down and the effector up, and ~~the controller further comprises~~ a control process capable of adjusting the aircraft longitudinal lift distribution for a selected supersonic Mach number to maintain a low sonic-boom, low drag-trim condition.

4. (Canceled):

5. (Canceled)

6. (Currently Amended): ~~The~~ A supersonic aircraft ~~according to Claim 1 further~~ comprising:

a fuselage extending forward and aft along a longitudinal axis, the fuselage having a lower surface and an upper surface;

a highly swept low aspect ratio wing coupled to the fuselage, the wing having a forward leading edge and an aft trailing edge;

an effector flap coupled to the wing trailing edge;

engines coupled to the aft portion of the wing lower surface; ~~and~~

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a tail empennage coupled to the fuselage aft of the wing on the fuselage upper surface in a position high relative to the wing, the tail empennage forming a channel region subject to complex shock patterns and an inverted V-tail geometry empennage coupled to the wing in a braced wing configuration and carrying lift at the aft portion of the aircraft on a high mounted tail, the length of the aircraft being effectively lengthened for shock waves below the aircraft, thereby further reducing sonic boom, the inverted V-tail carrying tail lift high to maintain a continuous lift distribution and structurally bracing the wing and engines;

an effector coupled to the tail empennage; and

a controller coupled to the effector flaps and the effectors, the controller further comprising a control process that reduces drag through channel relief by deflecting both the effector flap down and the effector up.

7. (Canceled):

8. (Canceled):

9. (Canceled):

10. (Currently Amended): ~~The~~ A supersonic aircraft ~~according to Claim 7 further~~ comprising:

an aircraft body extending forward and aft;

a highly swept low aspect ratio wing coupled to the body, the wing having a forward leading edge and an aft trailing edge;

an effector flap coupled to the trailing edge of the wing;

an inverted V-tail coupled at the aft portion of the aircraft body and coupled to the wing in a braced wing configuration, the inverted V-tail forming a channel region that can generate complex shock patterns;

two wing-mounted engines positioned beneath the wing at an aft location, the braced wing V-tail supporting the engines and enabling trim for a low sonic boom lift distribution;

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ruddervator control surfaces coupled to the inverted V-tail; and

a controller coupled to the effector flap and the ruddervator control surfaces, the controller comprising a control process that reduces drag through channel relief by deflecting both the effector flap down and the ruddervator control surfaces up.

11. (Original): The aircraft according to Claim 10 wherein:

the engines have a highly integrated wing/inlet geometry that enables low-boom compatibility and low inlet/nacelle installation drag.

12. (Currently Amended): ~~The~~ A supersonic aircraft ~~according to Claim 7 wherein~~ comprising:

an aircraft body extending forward and aft;

a highly swept low aspect ratio wing coupled to the body, the wing having a forward leading edge and an aft trailing edge;

an effector flap coupled to the trailing edge of the wing;

an inverted V-tail coupled at the aft portion of the aircraft body and coupled to the wing in a braced wing configuration, the inverted V-tail forming a channel region that can generate complex shock patterns;

ruddervator control surfaces coupled to the inverted V-tail; and

a controller coupled to the effector flap and the ruddervator control surfaces, the controller comprising a control process that reduces drag through channel relief by deflecting both the effector flap down and the ruddervator control surfaces up, and ~~the controller further comprises~~ a control process that adjusts aircraft longitudinal lift distribution for a selected Mach number to maintain a low sonic boom, low drag-trim condition..

13. (Canceled):

14. (Canceled):

15. (Canceled):

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16. (Canceled):

17. (Currently Amended): ~~The~~ A channel control system ~~according to Claim 15~~ for usage in a supersonic aircraft including a fuselage, wings, a tail empennage, and a plurality of control effectors coupled to the wings and the tail empennage, the empennage and wings forming a channel region that can form complex shock patterns at transonic speeds, the channel control system comprising:

a plurality of actuators coupled to the control effectors, the effectors including a flap coupled to the wing and an effector coupled to the tail empennage; and

at least one vehicle management computer coupled to the plurality of actuators, the at least one vehicle management computer further comprising a process for managing the control effectors in a drag reduction mode through channel relief by deflecting both the flap downward and the tail empennage effector upward, wherein:

the wing is a highly swept low aspect ratio wing coupled to the body, the wing having a forward leading edge and an aft trailing edge, and an effector flap coupled to the trailing edge of the wing;

the tail empennage is in a configuration of an inverted V-tail coupled at the aft portion of the aircraft body and coupled to the wing in a braced wing configuration, the tail empennage comprising ruddervator control surfaces coupled to the inverted V-tail; and

the at least one vehicle management computer further comprises a channel relief process that reduces drag through channel relief by deflecting both the effector flap downward and the ruddervator upward.

18. (Canceled):

19. (Canceled):

20. (Canceled):

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21. (Canceled):

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